

REMARKS

Prior to entry of this amendment, claims 1-18 are pending in the subject application.

Claim 3 has been canceled. Claims 13-18 are withdrawn from consideration. Claim 1 is the sole pending independent claim. Claims 1-2 and 4-12 are presented to the Examiner for consideration.

A. Introduction

In the outstanding Office Action Made Final, the Examiner rejected claims 1-2 and 4-12 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4-7 and 9 of U.S. Patent No. 6,886,919 to Lim et al. (hereinafter referred to as “the Lim et al. reference”) in view of U.S. Patent No. 5,841,452 to Silverbrook (hereinafter referred to as “the Silverbrook reference”) and U.S. Patent No. 5,710,070 to Chan (hereinafter referred to as “the Chan reference”); rejected claims 1-2, 5-6 and 8 under 35 U.S.C. § 102(b) as being anticipated by the Silverbrook reference; rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the Silverbrook reference in view of the Chan reference; and rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over the Silverbrook reference in view of U.S. Patent Publication No. 2002/0008738 to Lee et al. (hereinafter referred to as “the Lee et al. reference”).

B. Obviousness-Type Double Patenting Rejection of Claims 1-2, 4-12

In the outstanding Office Action Made Final, the Examiner rejected claims 1-2, 4-12 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4-7, and 9 of the Lim et al. reference in view of the Silverbrook and the Chan references. Although the Examiner actually listed claims 1-12, claim 3 is not included in this response because it has been canceled. Applicants respectfully traverse this rejection, for at least the following reasons.

The Examiner does not clearly identify the differences between the inventions defined by the conflicted claims, but instead declares that

“Claims 1-12 in the pending application for an ink-jet printhead having a metallic heat dissipation layer are covered by claims 1, 2, 4, 5, 6, 7, and 9 of the prior art as shown in the table.”

However, by the Examiner’s own admission, claims 1-2 and 4-12 are not covered by the Lim et al. reference alone, because the Examiner’s double patenting rejection also applies the teachings of the Silverbrook and Chan references. On pages 5 and 6 of the Office Action, the Examiner admits that the Lim et al. reference lacks the following elements,

“the restrictor having a length of about 200-750 μm of claim 2 of the pending application, the heater formed of one material selecting from the group consisting of TaAl, TiN, CrN, W, and polysilicon of claim 4 of the pending application, the plurality of passivation layers is formed of at least one material selected from the group consisting of SiO_2 , Si_3N_4 , SiC, Ta, Pd, Au, TaO, TaN, Ti, TiN, Al_2O_3 , CrN, and RuO_2 of claim 8 of the pending application, and the metallic conductor claimed by U.S. Patent No. 6,886,919 formed of aluminum or aluminum alloy of claim 5 of the pending application.”

respectively describing limitations recited in dependent claims 2, 4, 8, and 5.

The Examiner, however, fails to address the additional elements claimed in independent claim 1.

First, lines 3-4 of claim 1 recite “an ink chamber to be filled with ink to be ejected formed on an upper surface of the substrate.” The Examiner does not address this limitation. The Lim et al. reference mentions an ink chamber on line 2 of claim 1, but does not claim an ink chamber “formed on an upper surface of the substrate.”

Second, lines 5-6 of claim 1 recite “a restrictor, which is a path through which ink is supplied from an ink reservoir to the ink chamber, perforating a bottom surface of the substrate and a bottom surface of the ink chamber.” The Lim et al. reference does not claim a restrictor. While the Examiner uses the Silverbrook reference to provide restrictor teachings for claim 2, the Examiner never addresses the lack of a restrictor in the Lim et al. reference.

Thus, the Examiner has not presented a *prima facie* case of obviousness for independent claim 1. Moreover, the Examiner is completely silent as to why one of ordinary skill in the art would have added the restrictor of the Silverbrook reference to the printhead presented by the Lim et al. reference, which is completely lacking in any restrictor of any kind. The Examiner’s motivation statement on page 6 of the Office action does not address the lack of a restrictor in the Lim et al. reference.

Third, lines 7-8 of claim 1 recite “a nozzle plate, which is stacked on the upper surface of the substrate and forms an upper wall of the ink chamber.” Although the Lim et al. reference mentions a nozzle plate in lines 6-8 of claim 1, the Lim et al. reference does not claim a nozzle plate stacked on the “upper surface” of the substrate and forming an “upper wall” of the ink chamber, as claimed in claim 1 of the present application. The Examiner’s Office action has not and does not address these deficiencies.

Fourth, lines 9-10 of claim 1 recite “a nozzle perforating the nozzle plate at a position corresponding to a center of the ink chamber.” Although the Lim et al. reference mentions a nozzle in lines 9-11 of claim 1, the Lim et al. reference does not claim a nozzle “perforating the nozzle plate at a position corresponding to a center of the ink chamber,” as claimed in claim 1 of the present application. The Examiner has not and does not address these deficiencies.

Fifth, line 11 of claim 1 recites “a heater formed in the nozzle plate to surround the nozzle.” Although the Lim et al. reference mentions a heater in lines 12-15 of claim 1, the Lim et al. reference does not claim a heater “formed in the nozzle plate to surround the nozzle.” The Examiner has not and does not address these deficiencies.

Claims 2 and 4-12 all ultimately depend upon independent claim 1. Hence, claims 2 and 4-12 are allowable as being dependent on an allowable base claim, namely independent claim 1. Accordingly, applicants respectfully request favorable reconsideration and withdrawal of the double patenting rejection of claims 1-2 and 4-12.

C. Asserted Anticipation Rejection of Claims 1-2, 5-6 and 8

In the outstanding Office Action Made Final, the Examiner rejected claims 1-2, 5-6 and 8 under 35 U.S.C. § 102(b) as being anticipated by the Silverbrook reference. Although the Examiner listed claims 1-3, 5-6, and 8, claim 3 is not included in this response because it has been canceled. Applicants respectfully traverse this rejection, for at least the following reasons.

First, the examiner does not identify separate ink reservoir and ink chamber elements. The Silverbrook et al. reference indicates that the prior art had “a guide for the inward flow of ink” [col. 1, lines 25-26], and “the outward ejection of the ink” [col. 1, lines 27-28]. The Silverbrook et al. reference provides “a single, monolithic, integrally formed structure as opposed to the two part structure of the prior art.” [col. 4, lines 51-53].

Given that the Silverbrook et al. reference provides a single structure instead of defining separate sections for inward flow and outward ejection of ink, it does not anticipate the two part structure of the present invention. For inward flow of ink, the present invention has a restrictor “perforating a bottom surface of the substrate.” For outward ejection of ink, the present invention has a nozzle “perforating the nozzle plate.” Thus, unlike the Silverbrook reference, the present invention has separate sections for inward flow and outward ejection of ink. The Examiner never addresses this issue.

Second, the Examiner identifies the nozzle channel 114 of the Silverbrook reference as equivalent to the claimed restrictor. However, this channel neither perforates a bottom surface of the substrate nor a bottom surface of the ink chamber. Instead, the nozzle chamber 114 is part of the nozzle [col. 6, lines 34-36]. Accordingly, the nozzle chamber cannot correspond to the restrictor of independent claim 1.

Third, the Examiner argues that the Silverbrook reference provides a restrictor which is 300 microns deep. However, as depicted in Fig. 7, the nozzle channel 114 of the Silverbrook reference neither perforates a bottom surface of the substrate nor a bottom surface of the ink chamber. It does not function as the claimed restrictor.

Claims 2, 5-6, and 8 all ultimately depend upon independent claim 1. Hence, claims 2, 5-6, and 8 are allowable as being dependent on an allowable base claim, namely independent claim 1. Accordingly, applicants respectfully request favorable reconsideration and withdrawal of the rejection of claims 1-2, 5-6, and 8 under 35 U.S.C. § 102(b).

D. Asserted Obviousness Rejection of Claim 4

In the outstanding Office Action Made Final, the Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the Silverbrook reference in view of the Chan reference. Applicants respectfully traverse this rejection, for at least the following reasons. Neither the Silverbrook nor the Chan reference discloses the claimed restrictor.

Claim 4 ultimately depends upon independent claim 1. Hence, claim 4 is allowable as being dependent on an allowable base claim, namely independent claim 1. Accordingly, applicants respectfully request favorable reconsideration and withdrawal of the rejection of claim 4 under 35 U.S.C. § 103(a).

E. Asserted Obviousness Rejection of Claim 7

In the outstanding, Office Action Made Final, the Examiner rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over the Silverbrook reference in view of the Lee et al. reference. Applicants respectfully traverse this rejection, for at least the following reasons. Neither the Silverbrook nor the Lee et al. reference discloses the claimed restrictor.

Claim 7 ultimately depends upon independent claim 1. Hence, claim 7 is allowable as being dependent on an allowable base claim, namely independent claim 1. Accordingly, applicants respectfully request favorable reconsideration and withdrawal of the rejection of claim 7 under 35 U.S.C. § 103(a).

F. Conclusion

In view of the foregoing remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

Respectfully submitted,

LEE & MORSE, P.C.

Date: December 19, 2006


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DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.